8

STANDING COMMITTEE ON DEFENCE

(1995-96)

TENTH LOK SABHA

MINISTRY OF DEFENCE

[Action Taken on the Recommendations Contained in the 5th Report of the Committee on the Subject "Defence Research and Development—Major Projects"]

EIGHTH REPORT

LOK SABHA SECRETARIAT
NEW DELHI
March, 1996/Phalguna 1917 (Saka)

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STANDING COMMITTEE ON DEFENCE
(1995-96)

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[Action taken on the recommendations contained in the 5th Report of the Committee on the subject 'Defence Research and Development—Major Projects'.]

Presented to Lok Sabha on 12 March 1996
Laid in Rajya Sabha on 12 March, 1996

LOK SABHA SECRETARIAT
NEW DELHI
March, 1996/Phalguna 1917 (Saka)

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CORRIGENDA TO

THE 8TH REPORT OF STANDING COMMITTEE ON DEFENCE

Page	Para	Line	For	Read
(iii)		38	*ceased	**ceased
(iii)		40	Expired	*** Expired
(v)	4	2	been in	been printed in
3		21	Para Nos. 4.15 and 4.16	Para Nos. 4.13 and 4.15
3	1.9	4	progressd	progressed
4	1.10	5	aggression or	aggression on
5		1	the Ministry	The Ministry
15		16	changed	change

21 Under the existing heading Incorporate 'NIL'

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COMPOSITION OF THE STANDING COMMITTEE ON DEFENCE
(1995-96)

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28. Shri Abhay Pratap Singh
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30. Shri Kamaluddin Ahmed

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* Appointed w.e.f 8 February, 1996 *vice* Shri Indrajit Gupta resigned from the Chairmanship w.e.f. 22 January, 1996.

** Ceased to be a Member of the Committee consequent upon his appointment as Minister w.e.f. 13.09.95.

*** Expired on 04.12.95.

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2. Smt. Roli Srivastava — *Joint Secretary*
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* Ceased to be a Member of the Committee consequent upon his appointment as Minister w.e.f. 13.09.95.

** Ceased to be a Member of the Committee consequent upon his retirement from Rajya Sabha w.e.f. 24.7.95.

*** Nominated w.e.f. 17.8.95.

INTRODUCTION

I, the Chairman, Standing Committee on Defence (1995-96) having been authorised by the Committee to submit the Report on their behalf, present this Eighth Report on Action Taken by Government on the recommendations contained in the Fifth Report of the Committee (Tenth Lok Sabha) on the subject 'Defence Research & Development—Major Projects'.

2. The Fifth Report was presented to Lok Sabha/laid in Rajya Sabha on 24th August, 1995. The Government furnished their replies indicating action taken on the recommendations contained in the Report on 29th November, 1995. The Draft Report was considered and adopted by the Standing Committee on Defence (1995-96) at their sitting held on 7th March, 1996.

3. An analysis of action taken by Government on recommendations contained in the Fifth Report of the Standing Committee on Defence (Tenth Lok Sabha) is given in Appendix.

4. For reference facility and convenience the observations/recommendations of the Committee have been in thick type in the body of the Report.

NEW DELHI;
March 8, 1996
Phalguna 18, 1917 (Saka)

SHARAD DIGHE,
Chairman,
Standing Committee on Defence.

REPORT

CHAPTER I

This report of the Standing Committee on Defence deals with action taken by Government on the recommendations contained in their Fifth Report (Tenth Lok Sabha) on 'Defence Research and Development—Major Projects'

1.2 The Report was presented to Lok Sabha on 24th August, 1995. It contained 11 recommendations. Action taken notes have been received in respect of all recommendations.

1.3 Action taken notes on the recommendations of the Committee have been categorised as follows:

(i) Recommendations/Observations which have been accepted by the Government:

Sl. Nos. 1, 3, 4, 5, 6, 8, 9, 10 and 11.

(ii) Recommendations/Observations which the Committee do not desire to pursue in view of Government's replies:

Sl. Nos. 2 & 7.

(iii) Recommendations/Observations in respect of which Government's replies have not been accepted by the Committee:

Nil.

(iv) Recommendations/Observations in respect of which final replies of Government are still awaited:

Nil.

1.4 The Committee will now deal with the action taken by Government on some of their recommendations.

Project Monitoring

Recommendation (Sl. No. 03, Para Nos. 3.11 to 3.15)

1.5 In regard to the sanctioning and closing down of D.R.D.O. Projects the Committee recommended as follows:

> "The Committee note that DRDO takes up projects of development of weapon systems based on the current threat perceptions and users requirements. However, considering the very fact that as many as 618 out of 989 projects were closed down following the review undertaken in 1989, the Committee cannot but infer that Services requirements were not judiciously projected

and assessed, that rigorous controls as laid down for sanction of projects, when they were selected were not exercised properly, and that when such a large number of projects were being taken up, they were taken up in a rather indiscriminate manner.

The Committee feel that Defence R & D had unjustifiably burdened itself with too many low-end projects and did not concentrate on certain major projects in a focussed manner. The Committee, therefore, recommend that the project proposals be rigorously examined and feasibility studies carried out on the basis of the latest threat perception and the services need of the times, before sanctioning the projects. They also recommend that DRDO should concentrate on major projects rather than allow their resources to be diffused and to be scattered thinly as the requirements of Defence Forces will always remain time critical and any mismatch could result in heavy infructuous investment of scarce resources and adverse effect on operational capability.

The Committee further desire that the procedure laid down for the sanctioning of the projects may be made further stringent and all such proposals be subjected to rigorous examination.

The Committee wonder how DRDO had in the first place allowed itself to be saddled with 989 projects. The Committee desire that procedures specified by the Ministry of Defence in relation to sanctioning and closing down of DRDO projects may be revamped in the light of maturity acquired from their experience, as to obviate dead wood projects involving infructuous expenditure and to evolve a goal-oriented approach.

Procedures should also be amended to make it obligatory to conduct periodic review of the projects with a view to scrutinising the need for their continuity."

1.6 In their action taken reply, the Ministry of Defence have stated as follows:

"During the Corporate Review held in 1989, it was observed that DRDO was progressing 989 projects. As a consequence of the in-depth review, 371 projects were allowed to continue and the remaining were closed down as they had already fulfilled the possible level of achievement. In order to ensure that DRDO concentrated on priority projects in a concentrated manner and did not burden itself with too many low-end projects, new guidelines were issued for planning, sanction review and monitoring of projects thereby making the procedures for sanction of projects more stringent. Feasibility studies were made a prerequisite before a project costing 1 crore and above were sanctioned. A system of periodic 'Peer Review' was introduced for all major projects and programmes to carry out in-depth assessment and to recomend its further continuation beyond each predetermined milestone.

DRDO is now concentrating on major projects and also those envisaging development of emerging 'mother technologies' so that requisite competence is acquired before a major project is undertaken."

1.7 The Committee note the position stated by the Ministry of Defence in their reply stating *inter-alia* that in order to ensure that DRDO fully concentrated on priority projects and did not burden itself with too many low-end projects, new guidelines were issued for planning, sanction review and monitoring of projects thereby making the procedures for sanction of project more stringent. Feasibility studies were made a prerequisite before a project costing 1 crore and above was sanctioned. A system of periodic 'Peer Review' was introduced for all major projects and programmes to carry out in-depth assessment and to recommend its further continuation beyond each predetermined milestone.

The Committee desire that the new guidelines issued for planning, sanction, review and monitoring of the DRDO projects as also periodic 'Peer Review' of major projects should be strictly followed so as to ensure that the scarce resources of the country are not spent on infructuous projects.

Missile Development Programme

Recommendations (Sl. Nos. 04 and 06, Para Nos. 4.15 and 4.16)

1.8 Stressing the need for development and upgradation of Missile systems, the Committee recommended as follows:

"The Committee appreciate the remarkable progress achieved by our scientists and engineers in the Integrated Guided Missile Development Programme (IGMDP) and expect them to achieve pinnacle of success in the missile programme area."

"China has developed as a major nuclear and missile power. China also continues to be the main source of major weapons including missiles and allied technology to Pakistan, a very hostile neighbour, causing disquiet to India. Despite warming relations with China, China is and is likely to remain, the primary security challenge to India in the medium and long terms. Its enhancement of missile capabilities and its immense help to Pakistan in the missile programme are serious security concerns to India. The Committee feel that India has no option but to continue to develop and upgrade its missile capabilities for deterrance and not for aggression on national security consideration."

1.9 In reply, the Ministry have stated *inter-alia* as follows:

"Integrated Guided Missile Development Programme comprising development of 4 missiles namely PRITHVI, AKASH, TRISHUL and NAG is being progressd as planned.

Project AGNI envisaging development of re-entry technology

demonstrator vehicle has been successfully concluded and the consequent situation is being examined. Development trials of TRISHUL are expected to be competed in 1996 and that of AKASH and NAG in 1997. Thereafter these missiles will enter user trial/production/induction phases.

When developed, these missiles will have the desired deterrent effect on the adversary."

1.10 Keeping in view China being a major nuclear and missile power and main source of major weapons including missiles and applied technology to Pakistan, the Committee recommended that India had no option but to continue to develop and upgrade its missile capabilities for deterrence and not for aggression or National Security consideration. The Ministry have stated that the Integrated Guided Missile Development Programme (IGMDP) is being progressed as planned. When developed, these missiles will have the desired deterrent effect on the adversary.

National security cannot be oblivious of the realities of threat perception in the intention of the rival powers in the neighbourhood in acquisition of missiles and nuclear capability. The Committee, therefore, desire that India should go ahead with the completion of the development of their missile systems.

The Committee in this connection reiterate their earlier recommendation made in their Fourth report that the Government take quick decision on the induction and deployment of indigenously developed surface-to-surface 'Prithvi' missile.

The Committee also feel that the time has come when the Government should review their Technology Demonstrator-Agni project and that a decision is expeditiously taken to go in for serial production of this strategic missile for induction into the Armed Forces.

M.B.T. Arjun Tank

Recommendation (Sl. No. 09, Para Nos. 4.39 to 4.43)

1.11 In regard to delays in the design, development and finally the induction of M.B.T. (Arjun) Tank, the Committee had recommended as follows:

"The Committee are unhappy to note that there have been seventeen-fold escalation in the project cost of MBT having original sanction of Rs. 15.50 crore in March, 1974 increasing to Rs. 56.55 crore after first revision in October 1980 and finally rising to Rs. 280 crore in May 1987, for a state-of-the art tank designed to take care of threat of 2000 and beyond.

the Ministry have explained the cost escalation on the grounds of change in scope of the project, increase in number of prototypes from 12 to 42, inflation, escalation in FE rates.

The project was sanctioned in the year 1974 and the productionisation/induction of the tank is expected to commence in the Ninth Plan period. There has been tremendous escalation both in time and cost of the project. DRDO is the premier organisation of the country for Defence R&D engaged in design and development of major weapon systems since 1958. The Committee are conscious of the patience and hard work that is required in Defence R&D and that success in such Defence R&D Projects is very slow and difficult. However, the delay of about 24 years in the design and development and finally the production of M.B.T. Arjun Tank does not appear justified. Such delays as have been in the past, are the bane of defence research and production.

The Committee are not convinced by the justification advanced by the Ministry for change in GSQR specifications revised twice in less than 5 years after being specified in 1972. The Committee feel that DRDO embarked on the project of this magnitude, undertaken for the first time in the country, without any reasonable idea of the cost, and the scope of the project and hence necessitating quick changes in GSQR which resulted in considerable amount of re-work, *ab-initio* development and import of additional sub-systems/components. The Committee feel that there has been enormous and inexplicable time escalation which necessitate self-introspection in the Ministry as to bring to the light the reasons for the failure either on the part of DRDO or users who failed to foresee prudently threat perception and to project their requirements beyond 6 years in 1974 and just 5 years ahead in 1980.

The Committee find that competence building in DRDO on a project commenced after a project was taken in hand. The Committee suggest that the DRDO should evolve an approach of competence building with coordination and consultation with other agencies in the country and abroad. The Committee would therefore, like to stress that competence attainment and technological insight should be made pre-requisite for taking up any major project.

Despite sincere and dedicated efforts made by our scientists/ engineers such abysmal long delays create an impression that such projects were dealt with in the lackadaisical manner in the past. The Committee desire that the Ministry henceforth should call for progress report especially of those on-going projects which are

running behind schedule and review their position. This exercise should be undertaken with all seriousness by giving necessary directions to the implementing agencies. Such review made by Government on major projects lagging far behind schedule and the direction given to make up the lost time should also be reflected in the Annual report of the Ministry."

1.12 The Ministry of Defence have in their reply stated as follows:

"MBT project was sanctioned in 1974 with original probable date of completion (PDC) as 1984 formal user's trials of the tank started in 1993 by Army i.e. about 10 years later than the planned PDC. This delay was due to changes in GSQR to address threat perceptions beyond the year 2000.

Final phase of user trials for automotive and weapon system accuracy of state-of-the-art main battle tank (MBT) ARJUN was carried out by the Army during the summer of 1995 and later in the last quarter of 1995. Chief of the Army Staff (COAS) and the number of senior officers witnessed several demonstrations firing trials for weapon system accuracy. The results of these trials were highly satisfactory.

The Hon'ble Prime Minister of India handed over a symbolic replica of MBT ARJUN to the COAS on 09 Jan 96 to mark its successful development and clearance for series production. Planning action for technology transfer and productionisation has already begun to meet the Army's schedule for induction of the tank into the Service during Ninth Plan period.

It is not unusual in long cycle development projects that changes in threat perception due to dynamics of potential induction of new higher technology armaments by adversaries or their allies may force mid-course revision of QRs.

Consequent to corporate review carried out in 1989, it has been decided that major hardware development programmes will only be undertaken after carrying out detailed feasibility study and after having demonstrated the technology required for such programmes. All major programmes, more specifically the projects which are running behind schedule are now being reviewed in-depth periodically by an apex body constituted in Deptt. of Defence R&D, Ministry of Defence namely DRDO council which is chaired by Secretary, Deptt. of Defence R&D and has Chief Adviser (Tech), Chief Adviser (Management), CCR&DS and Additional Financial Adviser as Members."

1.13 The Committee note with satisfaction that the MBT Arjun has been successfully developed and that clearance for its series production has since been given. Planning action for technology transfer and productionisation of the Tank has already begun to meet the Army's schedule for induction of the Tank into the service during Ninth Plan period. The Committee hope that production of the MBT Arjun tank would commence as per schedule so that the Tank could be inducted into the Army by the end of the century.

1.14 The Committee had desired that the Ministry of Defence should call for progress report especially of those on-going projects which were running behind schedule and their position should be reviewed. The Committee had also desired that such review made by Government on major projects which were lagging far behind schedule and the direction given to make up the lost time should also be reflected in the Annual Report of the Ministry. The Ministry in their action taken reply have stated that all major programmes, more specifically the projects which were running behind schedule were being reviewed in-depth periodically by an apex body constituted in Department of Defence R&D, Ministry of Defence namely DRDO Council. The Committee reiterate their earlier recommendation that such review made by Government on major projects lagging far behind schedule and the direction given to make up the lost time should also be reflected in the Annual Report of the Ministry.

NEW DELHI;
March 8, 1996

Phalguna 18, 1917 (Saka)

SHARAD DIGHE,
Chairman,
Standing Committee on Defence.

CHAPTER II

RECOMMENDATIONS/OBSERVATIONS WHICH HAVE BEEN ACCEPTED BY THE GOVERNMENT

Recommendation (No. 01, Para Nos. 1.13 to 1.16)

The Committee note that the Department of Defence Research and Development is involved in developing new systems and technologies in the field of Defence in order to enable the country to enhance self-reliance in weapons and defence preparedness.

The Committee also note that the Department of Defence Research and Development operates through a network of 50 establishments under the Defence Research and Development Organisation (DRDO) and also through Aeronautical Development Agency, etc. The Department also functions in close partnership with 70 academic institutions, 50 national science and technology centres and about 150 public/private industries. The Department has about Rs. 3000 crore worth of R&d base, over 6000 scientists, engineers & managers supported by about 25,000 other personnel including administration and stores work force.

The Committee has also been informed that DRDO is guided by the R&D Council, under the Chairmanship of Raksha Mantri having Secretaries, Department of Science and Technology, Department of Atomic Energy, Department of Electronics, DG CSIR, Distinguished Scientists from academic institutions and other scientific departments as Members.

The Committee are appreciative of the efforts and achievements of the Department of Defence Research and Development and Defence Research and Development Organisation towards achieving the desired objective of self-reliance in critical defence technologies for national security.

The Committee, however, desire that establishments under DRDO should be further strengthened and their capabilities and expertise toned and geared up to enable them to enhance self-reliance level in meeting the requirements of our Armed Forces in the present day world when vital technologies are forcibly and unjustifiably being denied to India by technologically advanced countries under Missile Technology Control Regime (MTCR), Nuclear Non-Proliferation Treaty (NPT) and Coordinating Committee on Multilateral Export Control (COCOM).

Reply of the Government

DRDO have identified the critical technologies and have undertaken programmes of development of the 'mother technologies' to reduce the gap

between global and national technology levels. This will progressively reduce the dependence of country for critical technologies on technologically advanced countries and reduce the vulnerability of indigenous R&D programmes due to tightening of various denial regimes such as Missile Technology Control Regimes (MTCR), Nuclear Non-Proliferation Treaty (NPT) and Coordinating Committee on Multilateral Export Control (COCOM) etc. To accomplish this highly challenging task, the expertise and infrastructure available in all sectors including industry, academic institutions, universities and R&D laboratories in civil sector is being pooled by adopting consortium approach.

To progressively enhance the indigenous content of acquisitions by the Armed Forces to 70% by the year 2005, a 10 year self-reliance plan is being implemented in a three pronged approach:

(i) Support existing systems through indigenisation of critical spares.

(ii) Upgrade the existing systems for life extension and capability enhancement.

(iii) Progressively induct indigenous systems to minimise import of minor systems.

A Self Reliance Implementation Council (SRIC) has been formed to progress the implementation of the Self Reliance Plan under directions of Defence R&D Council.

Results of this thrust will be visible early in the next decade when consequent to induction of major systems under development namely MBT, Missiles, LCA etc. Defence acquisitions from indigenous sources are expected to exceed 50% of the total annual defence acquisition.

[Ministry of Defence O.M. No.H—11019/14/95/D (PARL) dated 23.11.95]

Recommendation (No. 03, Para Nos. 3.11 to 3.15)

The Committee note that DRDO takes up projects of development of weapon systems based on the current threat perceptions and users requirements. However, considering the very fact that as many as 618 out of 989 projects were closed down following the review undertaken in 1989, the Committee cannot but infer that services requirements were not judiciously projected and assessed, that rigorous controls as laid down for sanction of projects, when they were selected, were not exercised properly, and that when such a large number of projects were being taken up, they were taken up in a rather indiscriminate manner.

The Committee feel that Defence R&D had unjustifiably burdened itself with too many low-end projects and did not concentrate on certain major projects in a focussed manner. The Committee, therefore, recommend that the project proposals be rigorously examined and feasibility studies carried out on the basis of the latest threat perception

and the Services need of the times, before sanctioning the projects. They also recommend that DRDO should concentrate on major projects rather than allow their resources to be diffused and to be scattered thinly as the requirements of Defence Forces will always remain time critical and any mismatch could result in heavy infructuous investment of scarce resources and adverse effect on operational capability.

The Committee further desire that the procedure laid down for the sanctioning of the projects may be made further stringent and all such proposals be subjected to rigorous examination.

The Committee wonder how DRDO had in the first place allowed itself to be saddled with 989 projects. The Committee desire that procedures specified by the Ministry of Defence in relation to sanctioning and closing down of DRDO projects may be revamped in the light of maturity acquired from their experience, as to obviate dead wood projects involving infructuous expenditure and to evolve a goal-oriented approach.

Procedures should also be amended to make it obligatory to conduct periodic review of the projects with a view to scrutinising the need for their continuity.

Reply of the Government

During the Corporate Review held in 1989, it was observed that DRDO was progressing 989 projects. As a consequence of the in-depth review, 371 projects were allowed to continue and the remaining were closed down as they had already fulfilled the possible level of achievement. In order to ensure that DRDO concentrated on priority projects in concentrated manner and did not burden itself with too many low-end projects, new guidelines were issued for planning sanction, review and monitoring of projects thereby making the procedures for sanction of project more stringent. Feasibility studies were made a prerequisite before a project costing 1 crore and above were sanctioned. A system of periodic 'Peer Review' was introduced for all *major* Projects and programmes to carry out in-depth assessment and to recommend its further continuation beyond each predetermined milestone. DRDO is now concentrating on major projects and also those envisaging development of emerging 'mother technologies' so that requisite competence is acquired before a major project is undertaken.

[Ministry of Defence O.M. No.H—11019/14/95/D (PARL) dated 23.11.95]

Comments of the Committee

Please *see* Para No. 1.7 of Chapter I of the Report.

Recommendation (No. 04, Para No. 4.13)

The Committee appreciate the remarkable progress achieved by our scientists and engineers in the Integrated Guided Missile Development

Programme (IGMDP) and expect them to achieve pinnacle of success in the missile programme area.

Reply of the Government

Integrated Guided Missile Development Programme (IGMDP) is progressing as planned. User-trial phase of PRITHVI Missile has been successfully concluded and the subsequent activities are being progressed. Project AGNI envisaging development of re-entry technology demonstrator vehicle has been successfully concluded and the consequent situation is being examined. Development trials of TRISHUL are expected to be completed in 1996 and that of AKASH and NAG in 1997. Thereafter these missiles will enter user-trial/production/induction phases.

[Ministry of Defence, O.M. No.H-11019/14/95/D (PARL) dated 23.11.95]

Comments of the Committee

Please *see* Para No. 1.10 of Chapter I of the Report.

Recommendation (No. 05, Para No. 4.14)

The Committee note that the project involved foreign exchange component of the order of Rs. 154.07 crore in the original cost of Rs. 388.83 crore in 1983 which rose to Rs. 291.17 crore in the total amount of Rs. 784.06 crore. The Committee desire that adequate measures should be taken to reduce the foreign exchange component to the barest minimum in a phased manner without compromising efficiency of the system.

Reply of the Government

DRDO has already undertaken programme for development of critical components/sub-systems of missile system by pooling national S&T expertise and infrastructure available in academic institutions, universities and research laboratories in civil sector. It is expected that foreign exchange component for each missile system will progressively reduce to barest minimum in a phased manner.

[Ministry of Defence, O.M. No. H-11019/14/95/D (PARL) dated 23.11.95]

Recommendation (No. 06, Para No. 4.15)

China has developed as a major nuclear and missile power. China also continues to be the main source of major weapons including missiles and allied technology to Pakistan, a very hostile neighbour, causing disquiet to India. Despite warming relations with China, China is and is likely to remain, the primary security challenge to India in the medium and long terms. Its enhancement of missile capabilities and its immense help to Pakistan in the missile programme are serious security concerns to India. The Committee feel that India has no option but to continue to develop and upgrade its missile capabilities for deterrance and not for aggression on national security consideration.

Reply of the Government

Integrated Guided Missile Development Programme comprising development of 4 missiles namely PRITHVI, AKASH, TRISHUL and NAG is being progressed as planned. When developed, these missiles will have the desired deterrent effect on the adversary.

[Ministry of Defence, O.M. No. H-11019/14/95/D (PARL) dated 23.11.95]

Comments of the Committee

Please *see* Para No. 1.10 of Chapter I of the Report.

Recommendation (No. 08, Para No. 4.33)

The Committee are unhappy to find that initially Hindustan Aeronautics Limited (HAL) was given overall design responsibility for this new aircraft but later on responsibility was assigned to DRDO and whereafter for which a separate society was registered under the title ADA. The Committee are not aware of level of competence built up in DRDO before it embarked on this ambitious project. The project was taken up without the proper ground work and expertise and competence building, though DRDO had undertaken aircraft development since early 60s. The Committee feel that the LCA project which was monumental effort to develop a state-of-the-art combat aircraft should have been undertaken with proper ground work and attainment of requisite technology level.

The Committee are informed that the first major milestone was feasibility study followed by Project Definition which was completed in 1989 though taking six long years and that expenditure upto this phase was around Rs. 400 crore. The Committee also find that the second phase of the Project Full Scale Engineering Development, could not commence immediately due to resource constraints during 1989—92. The Committee are also unhappy to find that there was no or very little progress during the period 1989—92 and that in the second phase of the project, Full scale Engineering Development there was delay for over three years. The project has already suffered tremendous slippages both in time schedule and cost estimates. The Committee, therefore, desire that in future adequate budgetary allocation be made so that the prestigious project like LCA is completed within specified time schedule.

The Committee also desire that after completion of prototype trials, the LCA project should be reviewed.

Reply of the Government

It was recognised in early 1980s that in view of absence of any major aircraft development programme since 1960s, no single organisation including HAL had the necessary technology base, trained manpower or the infrastructure to undertake complex development programme for a Light Combat Aircraft.

It was assessed that many capabilities and capacities necessary for such programme already existed in country, though spread out amongst several national institutions/laboratories and public/private sector industry. Consequently, a new management structure called ADA was created, as a Govt. funded society, with adequate power with regards to the LCA programme, to effectively harness the expertise, manpower and infrastructural resources available in various sectors. This approach has already proved to be success considering that manpower, expertise and infrastructural resources of nearly 100 organisations are participating in LCA programme to progressively increase its indigenous content by developing state-of-the-art technologies and systems. The first LCA prototype has already been developed, integrated and 'rolled out' on 17 Nov. 95.

The feasibility study was completed by May 1985 which established the feasibility of developing advanced LCA related technologies within the country with selected inputs from abroad. Due to the constraints of techno-geo-political considerations, it took nearly two years for selection of foreign consultant for Project Definition Phase (PDP). This phase was completed within the stipulated time i.e. Dec. 88. Total expenditure incurred upto completion of this (PDP) phase was Rs. 200 crore. After detailed review of the PDP output by Indian Air Force (IAF), followed by review by specialist committee comprising of experts from IAF, Hindustan Aeronautics Limited, DRDO, ADA and later also by SA to RM and Chief of Air Staff, a strategy of phased approach to development was approved by General Body of ADA in April 1990. During 1989—92, the country faced severe FE crunch, which forced the Government to revise development strategy to reduce FE outgo by going in for increased indigenisation even at the cost of extended time frame. The current detailed design and engineering phase, also called phase I of Full Scale Engineering Development envisages development of two technology demonstrator LCA, followed by their flight tests, operational approvals and induction into IAF by the year 2003. Adequate budgetary support is being provided from time to time to meet the above mentioned time frame. It is planned to review the LCA project after completion of prototype trials.

[Ministry of Defence, O.M. No. H-11019/14/95/D (PARL) dated 23.11.95]

Recommendation (No. 09, Para Nos. 4.39 to 4.43)

The Committee are unhappy to note that there have been seventeen-fold escalation in the project cost of MBT having original sanction of Rs. 15.50 crore in March, 1974 increasing to Rs. 56.55 crore after first revision in October 1980 and finally rising to Rs. 280 crore in May 1987, for a state-of-the-art tank designed to take care of threat of 2000 and beyond. The Ministry have explained the cost escalation on the grounds of change in scope of the project, increase in number of prototypes from 12 to 42, inflation and escalation in FE rates.

The project was sanctioned in the year 1974 and the productionisation/ induction of the tank is expected to commence in the Ninth Plan period. There has been tremendous escalation both in time and cost of the project. DRDO is the premier organisation of the country for Defence R&D engaged in design and development of major weapon systems since 1958. The Committee are conscious of the patience and hard work that is required in Defence R&D and that success in such Defence R&D projects is very slow and difficult. However, the delay of about 24 years in the design and development and finally the production of M.B.T. Arjun Tank does not appear justified. Such delays as have been in the past, are the bane of defence research and production.

The Committee are not convinced by the justification advanced by the Ministry for change in GSQR specifications revised twice in less than 5 years after being specified in 1972. The Committee feel that DRDO embarked on the project of this magnitude, undertaken for the first time in the country, without any reasonable idea of the cost, and the scope of the project and hence necessitating quick changes in GSQR which resulted in considerable amount of re-work, ab-initio development and import of additional sub-systems/components. The Committee feel that there has been enormous and inexplicable time escalation which necessitate self-introspection in the Ministry as to bring to the light the reasons for the failure either on the part of DRDO or users who failed to foresee prudently threat perception and to project their requirements beyond 6 years in 1974 and just 5 years ahead in 1980.

The Committee find that competence building in DRDO on a project commenced after a project was taken in hand. The Committee suggest that the DRDO should evolve an approach of competence building with coordination and consultation with other agencies in the country and abroad. The Committee would therefore, like to stress that competence attainment and technological insight should be made pre-requisite for taking up any major project.

Despite sincere and dedicated efforts made by our scientists/engineers such abysmal long delays create an impression that such projects were dealt with in the lackadaisical manner in the past. The Committee desire that the Ministry henceforth should call for progress report especially of those on-going projects which are running behind schedule and review their position. This exercise should be undertaken with all seriousness by giving necessary directions to the implementing agencies. Such review made by Government on major projects lagging far behind schedule and the direction given to make up the lost time should also be reflected in the Annual Report of the Ministry.

Reply of the Government

MBT project was sanctioned in 1974 with original probable date of completion (PDC) as 1984 formal user's trials of the tank started in 1993

by Army i.e. about 10 years later than the planned PDC. This delay was due to change in GSQR, to address threat perceptions beyond the year 2000.

Final phase of user trials for automotive and weapon system accuracy of state-of-the-art main battle tank (MBT) ARJUN was carried out by the Army during the summer of 1995 and later in the last quarter of 1995. Chief of the Army Staff (COAS) and a number of senior officers witnessed several demonstrations firing trials for weapon system accuracy. The results of these trials were highly satisfactory.

The Hon'ble Prime Minister of India handed over a symbolic replica of MBT ARJUN to the COAS on 09 Jan, 1996 to mark its successful development and clearance for series production. Planning action for technology transfer and productionisation has already begun to meet the Army's schedule for induction of the tank into the Service during Ninth Plan period.

It is not unusual in long cycle development projects that changed in threat perception due to dynamics of potential induction of new higher technology armaments by adversaries or their allies may force mid-course revision of QRs.

Consequent to corporate review carried out in 1989, it has been decided that major hardware development programmes will only be undertaken after carrying out detailed feasibility study and after having demonstrated the technology required for such programmes. All major programmes, more specifically the projects which are running behind schedule are now being reviewed indepth periodically by an apex body constituted in Deptt. of Defence R&D, Ministry of Defence namely DRDO council which is chaired by Secretary, Deptt. of Defence R&D and has Chief Adviser (Tech.), Chief Adviser (Management), CCR&Ds and Additional Financial Adviser as Members.

[Ministry of Defence O.M. No. H-11019/14/95/D(PARL) dated 23.11.95]

Comments of the Committee

Please *see* Para Nos. 1.13 & 1.14 of Chapter I of the Report.

Recommendations (No. 10, Para Nos. 4.52 to 4.55)

The Committee note that MBT Arjun was first subjected to technical trials in 1988 and since then a number of trials have been conducted to check and evaluate the various systems as also its efficacy as an integrated fighting machine.

The Committee have been informed that on the basis of users trials of summer 1994, Army Headquarters in consultation with DRDO had laid down certain basic Imperatives. The DRDO has since carried out

modifications/improvements accordingly which are expected to get validated during summer trials of 1995.

The Study Group of the Committee during the course of their on-the-spot study visit have been informed that 30 deficiencies were pointed out by the users during the previous tank trials, out of which 75% have been taken care of. However, certain deficiencies in automotive system, weapon system and ergonometry still remains to be effectively overcome.

The Committee regret that despite the prolonged technical trials since 1988 and the user trials since 1993, the development process is yet to be completed. The Committee hope that the DRDO would chalk out a time bound plan for the removal of the deficiencies pointed out earlier by the users as also the new shortcomings which might have come to their notice during the summer trials of 1995 so as to ensure the formal induction of MBT Arjun with world class automotive system, weapon system and working environment for crew, during the Ninth Plan.

Reply of the Government

A time bound plan has been worked out in consultation with Army for removing the shortcomings and facilitating formal induction of MBT ARJUN, with world class automotive system, weapon system and working environment for the crew during Ninth Plan. According to this plan, three sets of trials were planned in Aug., Sep. and Oct. 95 to be followed by demonstration firings to COAS in Nov./Dec. '95. As automotive trials in summer of 1995 had yielded good results, these trials concentrated on weapon accuracy which also included trials against moving target. Weapon accuracy trials held as per above plan in Aug., Sep. and Oct. '95 have given satisfactory results. During Oct. '95 a demonstration firing was held which was witnessed by the Chief of Army Staff and a number of senior Army Officers. Results of the demonstration firing trials were satisfactory with 11 out of 12 rounds fired from moving tank to moving target hitting the bull's eye. Another demonstration firing for COAS is being arranged during Nov. 1995, which will be followed by final demonstration firing in Dec., 1995, after resolving all the residual problems.

[Ministry of Defence O.M. No. H-11019/14/95/D/(PARL) dated 23.11.95]

Recommendation (No. 11, Para Nos. 4.60 & 4.61)

The Committee note that the Defence Research and Development Organisation (DRDO) has undertaken an integrated Electronic Warfare Programme jointly with the Army to meet the requirements of Defence Services for the year 2000 onwards. The Committee further note that the project sanctioned on 3rd May, 1995, envisages the delivery of Electronic Warfare entities comprising of Communication and non-communication

type system to the Army. The project is scheduled to be completed in about 66 months from the date of sanction.

The Committee, considering the past performance of the DRDO in regard to other major projects specially the time and cost overruns, desire that high priority be accorded to the project and the management structure and other monitoring mechanism be adequately strengthened and equipped to ensure completion of the project within laid down time frame. The Committee also hope that the DRDO would keep track of the related developments and advances in the EW field as to keep the system state-of-the-art. The Committee also desire that the participation of public and private sector companies in the programme be further increased as also other appropriate measures be taken to bring down the import content which is quite high. The Committee also recommend that E.W. Programmes for modernisation of the Air Force and Navy may also be considered for being taken up by DRDO jointly with the other Services.

Reply of the Government

The Integrated Electronic Warfare Programme for Army and Navy were taken up in May 1994 and June 1995 respectively. To ensure that the programme is executed within the sanctioned time and cost a three tier management boards structure was formed to review, monitor and steer the programme. The Apex Board chaired by Secretary Defence R&D at the highest level, Executive Board chaired by the Vice Chief of Army/Air Staff at the intermediate level and the Management Board Chaired by Director of the DRDO laboratory at the working level carryout periodic in-depth review and analysis so that all problems or bottlenecks are effectively resolved. This approach has already given rich dividends, with some sub-system of the Army EW Programme already under integration.

DRDO is continuously keeping track of global developments in EW area through media and through visits of scientists to developed countries. The present technology level of Army EW programme will be effective till the year 2010.

Many public and private sector units are involved in the EW Programmes. R&D activities have been undertaken in DRDO laboratories in association with Industry to progressively reduce the import content in subsequent systems.

A parallel programme has been taken up for Air Force for development of Air borne Signal Intelligence and Electric counter-measure systems.

[Ministry of Defence O.M. No.. H-11019/14/95/D/(PARL) dated 23.11.95]

CHAPTER III

RECOMMENDATIONS/OBSERVATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF GOVERNMENT'S REPLIES

Recommendation (No. 02, Para Nos. 2.11 & 2.12)

The Committee note that the expenditure on Defence R&D as a percentage of total Defence expenditure increased from 2.6 per cent in 1983-84 to 4.6 per cent in 1987-88. Thereafter, the Budgetary allocation declined in real terms and fluctuated between 4.2 and 4.5 per cent due to situation of overall resource crunch in the Government of India. The Ministry of Defence has, however, pointed out that the present Budgetary allocation for Defence R&D is based on on-going development projects and urgent new projects to be sanctioned. Prioritisation of development projects is done to ensure that important projects relating to urgent Service requirements do not suffer due to resource crunch.

Budgetary allocation on Defence R&D in India is low as compared to share of more than 10 per cent in technologically advanced countries whose overall budgetary level is also very much higher. Taking into account geo-political and security environment, the Committee feel that there is a need for stepping up allocations for Defence R&D to give thrust to efforts to speed up pace of self-reliance in the development of state-of-the-art defence weapons/systems and new emerging technologies in the defence field. The Committee reiterate their earlier recommendation made in their Fourth Report that 'allocations for DRDO are progressively increased to about 10 per cent level by 2000 as to fully gear up the R&D Organisations to meet the requirements of Defence Services' as also achieve desired objectives of self-reliance in critical defence technologies.

Reply of the Government

Budgetary allocations for Defence R&D have progressively been increased from a mere 2.8% in 1983-84 to 5.3% in 1995-96. The increase has offset the inflation and also met the funds required for prioritised Defence R&D projects. The budgetary allocation for Defence R&D will be further enhanced in need-based manner to ensure that progress of Defence R&D programmes is not hindered for want of funds

[Ministry of Defence O.M. No. H-11019/14/95/D (PARL) dated 23.11.95]

Recommendation (No. 7, Para Nos. 4.31 & 4.32)

The Committee note that LCA is a multi-role fighter aircraft being designed primarily for offensive role. It integrates modern design concepts and state-of-the-art technologies. LCA is likely to be future new generation aircraft of the Indian Air Force which will replace MiG series of the aircrafts.

The Committee note that LCA was first sanctioned in the year 1983 with an original cost of Rs. 560 crore. The Committee have, however, observed that there has been wide cost escalation between the original estimates and the final estimates. The final cost is estimated to be four times the original cost.

The Committee are not able to understand this big gap in the estimates. The Committee expect that DRDO authorities on the basis of their experience gained in the 90s on design development will project realistic estimates for their projects in future.

Reply of the Government

The original estimate of (1983) Rs. 560 crore was based only on conceptual studies of LCA and envisaged a strategy of development involving building of fuselage and undercarriage indigenously and importing all the aircraft systems including flight control system and wing. Indigenisation of these systems was to be taken up subsequently in a phased manner. Factors like devaluation of Rupee *vis-a-vis* US dollar, cumulative effect of devaluation during last decade, change in development strategy involving indigenisation of greater number of systems in the first instance which in turn calls for greater non-recurring expenditure to be incurred for infrastructure for development/qualification etc. have led to substantial cost escalation. Therefore, Government have approved and estimated cost of Rs. 2188 crore (FE Rs. 873 Crore) for the phase I of Full Scale Engineering Development (FSED) of LCA. The new development strategy has culminated into large number of LCA system/technologies getting indigenised. With this approach the foreign exchange outgo will be minimised and also dependence on foreign sources for some key systems/technologies will be obviated. These are laudable goals even if it meant increase in time frame and costs.

It may be noted that the development cost of LCA is lower as compared to similar efforts undertaken by the Swedish for development of Grippen JAS 39. The estimated cost of development of LCA (at Oct 1991 price level) is US $ 1.9 billion as compared to US $ 2.9 billion for Swedish Grippen. While Sweden had adequate infrastructure and technology base, India had to start with a handicap of scanty infrastructure and poor technology base.

However, the experience gained from LCA and other such projects would give a better insight into cost estimates for future projects.

[Ministry of Defence O.M.No.H-11019/14/95/D(PARL) dated 23.11.95]

CHAPTER IV

RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH GOVERNMENT'S REPLIES HAVE NOT BEEN ACCEPTED BY THE COMMITTEE

CHAPTER V

RECOMMENDATIONS/ OBSERVATIONS IN RESPECT OF WHICH FINAL REPLIES OF THE GOVERNMENT ARE STILL AWAITED

-NIL-

MINUTES OF THE ELEVENTH SITTING OF STANDING COMMITTEE ON DEFENCE

(1995-96)

The Committee sat on Thursday, the 7th March, 1996 from 1600 hrs. to 1810 hrs.

Shri Sharad Dighe —*Chairman*

MEMBERS

Lok Sabha

2. Shri Bhupinder Singh Hooda
3. Sqn. Ldr. Kamal Chaudhry
4. Shri Vijay Naval Patil
5. Shri Ram Niwas Mirdha
6. Shri Yoganand Saraswati
7. Shri B.L. Sharma Prem
8. Shri Jagat Vir Singh Drona
9. Shri Amal Datta
10. Shri Hannan Mollah
11. Shri Indrajit Gupta
12. Shri Pratap Singh
13. Shri Abhay Pratap Singh
14. Maj. Gen. R.G. Williams

Rajya Sabha

15. Shri B.B. Dutta
16. Shri K.R. Malkani
17. Shri Sushil Kumar Sambhajirao Shinde

Secretariat

1. Smt. Roli Srivastava —Joint Secretary
2. Shri. K.L. Narang —Deputy Secretary
3. Shri. A.K. Singh —Under Secretary

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7. Thereafter, the Committee considered the draft Report on action taken by the Government on the recommendations contained in their Fifth- Report on the subject 'Defence Research and Development—Major Projects' and adopted the same.

8. The Committee authorised the Chairman to make verbal and consequential changes if any arising out of factual verification and security vetting and finalise the Report for presentation to the Parliament.

The Committee then adjourned.

APPENDIX

Analysis of the Action Taken by Government on the recommendations contained in the 5th Report of the Standing Committee on Defence (Tenth Lok Sabha) on the subject Defence Research and Development—Major Projects.

		% of Total
(I) Total number of recommendations	11	
(II) Recommendations/Observations that have been accepted by Government	9	81.82
(III) Recommendations/Observations which the Committee do not desire to pursue in view of Government's Reply	2	18.18
(IV) Recommendations/Observations in respect of which Government reply has not been accepted by the Committee	Nil	—
(V) Recommendations/Observations in respect of which final reply of Government is still awaited	Nil	—